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AUTHOR Gifford, Vernon D.; Bellipanni Lawrence
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ABSTRACT

A study was conducted to determine the perceived applicability of, and the extent to which, introductory college/university core science classes were meeting the daily needs/problems of education majors at the college freshman level. A second purpose was to determine if there would be differences in perceived applicability levels of courses taken at junior colleges as compared to senior colleges. Responses from a two-question survey of students majoring in elementary and non-science secondary education (N=905) enrolled in the College of Education at two universities were analyzed. The questions asked whether course content seemed applicable to everyday life, and after having taken the course, whether the course material applied in meeting daily needs/problems. Analysis revealed that the impact of required core courses in natural science had results that fell far short of fulfilling the recommendations of most national organizations interested in science education. While up to 19% of students rated courses or application of courses as "frequently" relevant to everyday needs, up to 39% selected the "never" category. Differences found favored ratings by: elementary education majors over secondary education majors; junior college students over senior college students; and students taking physical science over those taking biological science. Contains five references. (GLR)

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THE PERCEIVED RELEVANCY OF COLLEGE FRESHMAN CORE COURSES IN NATURAL SCIENCE

by

Vernon Gifford
Mississippi State University

and

Lawrence Bellipanni
University of Southern Mississippi

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The Perceived Relevancy of College Freshman
Core Courses in Natural Science

The purpose of this study was to extend a 1989 study of the perceived applicability of and the extent to which introductory college/university core science classes are meeting the daily needs/problems of education majors to a state-wide population. In a limited 1989 study, Gifford found that up to 34% of freshman core courses failed in preparing students to interact meaningfully with their environment.

Many national groups and organizations have expressed this same concern. In 1986, the National Assessment for Educational Progress (NAEP) concluded a 20 year study. The NAEP findings stated that our schools were producing a generation of students who lack the basic ability necessary to make judicious daily decisions (NSTA, 1988).

In February of 1989, the Education Testing Service (ETS) released its latest national report card, indicating that students cannot apply basic school skills in solving ordinary problems. ETS stated relevancy of the "three R" skills is not apparent when students' application of the material is required (Brennon, 1989). In a similar study, the National Science Foundation (1988) reported results indicating that the proportion of science classes that use "hands-on" activities has dropped between 15 and 27 percent since 1977 (AACTE, 1988).

The U.S. Department of Education summed up many reports in its paper "What Works" on research about teaching and learning. It seems apparent that, by every standard that emphasizes higher level cognitive

objectives, the average classroom is found wanting (U.S. Department of Education, 1986). It seems that all too frequently science instruction is more often science presented in a narrative, descriptive, or didactic way, emphasizing content and lower level cognitive objectives than objectives emphasizing the relevancy or application of science content.

How can this all be true when most science instructors give "lip" service to the ideas of "hands-on," "discovery," and the development of conceptual tools which allow them to interact intelligently with their environment (daily lives)?

Therefore, the purpose of this study was to determine the perceived applicability of and the extent to which introductory core science classes are meeting the daily needs/problems of education majors at the college freshman level. A second purpose was to determine if there would be differences in perceived applicability levels of courses taken at junior colleges as compared to senior colleges.

Sample and Procedures

The Science Requirement Survey was constructed and validated during the spring of 1989. All natural science courses that were approved to fulfill university core curriculum requirements in natural science at two major universities in Mississippi were used. These universities were selected as intact groups because they graduated the largest number of elementary and secondary majors of the eight colleges and universities in the state. To graduate, all students must complete a university-wide core which includes 6-9 semester hours taken from the natural science area. From a list of all courses, students checked the courses they had taken and then were instructed, "In an effort to assess the functional and usage level obtained from introductory biological and physical science classes taken, please respond to the following two

questions:

1. The content of this course seemed applicable to everyday life.
2. Since taking this course, I have applied material from the course in meeting my daily needs/problems."

A three-response Likert-type scale (Frequently-Seldom-Never) was used to assess each question.

Subjects

Subjects for the study were the 905 senior elementary and non-science secondary students enrolled in the College of Education at the two universities. Secondary students that were obtaining teacher certification in any area of natural science were excluded from the study as they did not typically enroll in introductory core courses.

Results and Discussion

Responses presented in Table 1 show that 14% of all students marked the "Frequently" choice when a measure of relevance was assessed by combining questions 1 and 2. Thirty-four percent of the total population selected the "Never" choice. Based upon the recommendations in the literature review of this study, the above data indicates that core courses in the natural sciences are failing to meet the relevancy criteria advocated.

Tables 2 and 3 present data when the population was categorized according to elementary and secondary majors. Only small differences existed between the sub-populations and the total population. On the "Frequently" category, the rating of elementary education majors was 3% higher than secondary education majors. The trend was for secondary majors to move their "Frequently" ratings down to the "Seldom" level.

Tables 4 and 5 present data for courses taken at junior colleges

and senior colleges respectively. The "Frequently" column did not deviate from the 15% ratings given by the total group of students. There was a 14% difference in the ratings given in the "Never" column. Senior college students rated courses as never relevant/applicable more frequently than did junior college students.

Tables 6 and 7 present data for courses categorized as biological or physical science. A difference of 7% existed on the total "Frequently" rating. Physical science courses taken by students were rated as more relevant/applicable than biological science courses.

In all groups of students, the response to Question 1 was more positive than to Question 2. "Frequently" was selected a greater number of times, and "Never" was selected less. This data indicates that although 19% of the students frequently felt the content of a course was applicable to everyday life, course procedures and/or activities did not develop the material to the extent that material was applied in meeting their daily needs/problems. A total of 9% of the students marked "Frequently" on Question 2.

Summary--Implications

The results of this study indicate the impact of required core courses in natural science has results that fall far short of fulfilling the recommendations of most national organizations interested in science education. While up to 19% of students rated courses or application of courses as "Frequently" relevant to everyday needs, up to 39% selected the "Never" category. Differences found favored ratings by: elementary students over secondary students; junior college students over senior college students; and physical science students over biological science students.

References

American Association of Colleges for Teacher Education. (1988, November 21). Washington highlights.

Brennon, M. (1989, February 15). National report card. School report: Basics better but little else. Commercial Appeal.

Gifford, V. D. (1989, November). Relevancy based science education. Paper presented at the annual meeting of the Mid-South Educational Research Association, Little Rock, AR.

National Science Teachers Association. (1988, October/November). Message from the president, LaMoine Mutz. National Science Teachers Association Report.

U.S. Department of Education. (1986). What works. Research about teaching and learning. Washington, DC: Author.

Table 1

Frequency of Response and Percent to Questions 1 and 2 by All Students

	Frequently	Seldom	Never	N
Question 1	176 (19%)	501 (55%)	228 (25%)	905
Question 2	84 (9%)	429 (47%)	392 (43%)	905
Total Q.1&2	260 (14%)	930 (51%)	620 (34%)	1810

Table 2

Frequency of Response and Percent to Questions 1 and 2 by All Elementary Education Students

	Frequently	Seldom	Never	N
Question 1	129 (20%)	346 (55%)	158 (25%)	633
Question 2	64 (10%)	292 (46%)	277 (43%)	633
Total Q.1&2	193 (15%)	638 (50%)	435 (34%)	1266

Table 3

Frequency of Response and Percent to Questions 1 and 2 by All Secondary Education Students

	Frequently	Seldom	Never	N
Question 1	47 (17%)	155 (57%)	70 (26%)	272
Question 2	20 (7%)	139 (50%)	115 (42%)	272
Total Q.1&2	67 (12%)	292 (54%)	185 (34%)	544

Table 4

Frequency of Response and Percent to Questions 1 and 2 by Students Taking Courses at a Junior College

	Frequently	Seldom	Never	N
Question 1	85 (21%)	246 (60%)	70 (17%)	411
Question 2	42 (10%)	233 (57%)	136 (33%)	411
Total Q.1&2	127 (15%)	479 (58%)	206 (25%)	822

Table 5

Frequency of Response and Percent to Questions 1 and 2 by Students Taking Courses at a Senior College

	Frequently	Seldom	Never	N
Question 1	115 (19%)	301 (50%)	185 (30%)	601
Question 2	59 (10%)	257 (43%)	285 (47%)	601
Total Q.1&2	174 (14%)	558 (46%)	470 (39%)	1202

Table 6

Frequency of Response and Percent to Questions 1 and 2 by Biological Science Students

	Frequently	Seldom	Never	N
Question 1	94 (16%)	311 (55%)	166 (29%)	571
Question 2	42 (7%)	272 (48%)	257 (45%)	571
Total Q.1&2	136 (12%)	583 (51%)	423 (37%)	1142

Table 7

Frequency of Response and Percent to Questions 1 and 2 by Physical Science Students

	Frequently	Seldom	Never	N
Question 1	111 (25%)	236 (52%)	105 (23%)	452
Question 2	62 (14%)	232 (51%)	158 (35%)	452
Total Q.1&2	173 (12%)	468 (53%)	263 (29%)	904